

What is claimed is:

1. Apparatus to provide a measure of disk drive head velocity in a disk drive wherein movement is produced by a disk drive motion mechanism that includes a coil, which apparatus comprises:
  - 5 a controller that outputs one or more digital signals that are applied as input to a first component, and in response, the first component outputs a reference voltage;
  - a second component, responsive to voltage output across the coil and the reference voltage, outputs a measure of a difference between the coil voltage and the reference voltage; and
  - 10 a third component, responsive to the measure of the difference, outputs a first value if the coil voltage is greater than the reference voltage and a second value if the coil voltage is less than the reference voltage, which third component output is applied as input to the controller;wherein the controller executes a search algorithm that varies the one or  
15 more digital signals while observing changes in the third component output to provide a digital estimate of the coil voltage, which estimate provides a measure of the disk drive head velocity.
2. The apparatus of claim 1 wherein the first component comprises one or more resistors.
- 20 3. The apparatus of claim 3 wherein the first component comprises a digital-to-analog converter having one or more inputs, and an output from the DAC is applied as input to a resistor.
4. The apparatus of claim 2 wherein the third component is a comparator.
- 25 5. The apparatus of claim 3 wherein the third component is a comparator.
6. The apparatus of claim 2 wherein the second component is a differential amplifier.
7. The apparatus of claim 3 wherein the second component is a  
30 differential amplifier.

8. Apparatus that causes disk drive head velocity in a disk drive wherein movement is driven by a disk drive motion mechanism that includes a coil to approximate a predetermined value of disk drive head velocity, which apparatus comprises:

5 a current driver that applies current to the coil in response to a current signal;

a controller that outputs: (a) one or more digital signals that are applied as input to a first component, and response, the first component outputs a reference voltage, and (b) the current signal;

10 a second component, responsive to voltage output across the coil and the reference voltage, outputs a measure of a difference between the coil voltage and the reference voltage; and

a third component, responsive to the measure of the difference, outputs a first value if the coil voltage is greater than the reference voltage and a second value if the  
15 coil voltage is less than the reference voltage, which third component output is applied as input to the controller;

wherein the controller executes a feedback algorithm that varies the current signal while observing changes in the third component output, wherein the feedback algorithm causes the current signal to supply more current to the coil whenever the third  
20 component is equal to the second value and causes the current signal to supply more current otherwise.